

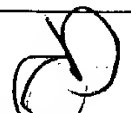


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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/891,849	06/25/2001	Steven Verhaverbeke	004711/P1	4749
32588	7590	05/05/2004	EXAMINER	
APPLIED MATERIALS, INC. 2881 SCOTT BLVD. M/S 2061 SANTA CLARA, CA 95050			MARKOFF, ALEXANDER	
			ART UNIT	PAPER NUMBER
			1746	
DATE MAILED: 05/05/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/891,849	VERHAVERBEKE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Alexander Markoff	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-207 is/are pending in the application.
- 4a) Of the above claim(s) 26-44, 47-51, 57-104 and 109-207 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25, 45, 46, 52-56 and 105-108 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/3/01, 7/8/02</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of claims 1-25, 45, 46, 52-56 and 105-108 in Paper filed 10/17/03 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 26-44, 47-51, 57-104 and 109-207 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper filed 10/17/03.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1-25, 45, 46, 52-56 and 105-108 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are at least: the relationships between the recited structural elements, such as means for holding, means for providing, means for flowing in claims 1-25 and 52-56; relationships between a platter and a nozzle in claims 45 and 46; the relationship between the bracket, means for providing, means for flowing in claims 105-108. The

dependent claims also omit recitation of the structural relationships between recited elements.

5. Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim is indefinite because it is not clear what is referenced as a "frequency of 4215 m/d". The recited equation will not provide units proper for measuring frequencies

Claims 20 and 21 are indefinite because it is not clear what is meant by the requirement to the platter thickness. It is not clear what is meant by "the platter thickness is one fourth the one or more acoustic wave transducers sonic wavelength". It is not clear how this close is related to " $(\lambda/4) \pm 30\%$ ". Further, it appears that recited close contradicts to  $(\lambda/4) \pm 30\%$ .

Claim 52 is indefinite because it is not clear how can the power applied to the transducers reach the wafer.

Claim 53 is indefinite because it is not clear what is meant by "(2) (a thickness of the wafer)".

Claim 54 is indefinite because it is not clear where the transducers should be mounted and what structure is required.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-11, 15, 18, 22-25, 54-56 and 105-108 are rejected under 35 U.S.C. 102(b) as being anticipated by Bergman et al (US Patent NO 5,235,995).

Bergman teaches an apparatus as claimed. See entire document, especially Fig. 1 and the related description, and columns 8-17.

8. Claims 1-5, 8-15, 18, 19, 22, 52, and 54-56 are rejected under 35 U.S.C. 102(a) as being anticipated by Busnaina (WO 0021692).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 6, 7, 45-46 and 105-108 are rejected under 35 U.S.C. 103(a) as being unpatentable over Busnaina in view of Bergman et al, Akatsu et al (US Patent No 6,021,789) and Ohmi et al (Advanced Wet Cleaning Technology for Next Generation FPD Manufacturing).

Busnaina teaches an apparatus as claimed except for specific recitation of means for rotating or linear moving of the wafers. Busnaina, however, teaches relative movement of the substrate to be cleaned and the acoustic waves application means.

Bergman et al, Akatsu et al and Ohmi et al teach that rotational and linear movement of the substrates during the cleaning were conventional in the art.

It would have been obvious to an ordinary artisan at the time the invention was made to provide the apparatus of Busnaina with any conventional means to enable

relative movement between the substrate and the acoustic waves application means, including the ones recited by the secondary documents in order to use the conventional means for their conventional purpose with reasonable expectation of adequate results.

As to the claims requiring fluoropolymer coating:

Bergman et al teach that it was conventional to provide inside of the treatment apparatuses with inert fluoropolymer material, such as TEFLON in order to make it suitable for direct contact with chemicals used in processing.

It would have been obvious to an ordinary artisan at the time the invention was made to provide the parts of the apparatus of Busnaina, which are in contact with the chemicals, with a fluoropolymer, such as TEFLON in order to make it suitable to contact with chemicals, as it thought by Bergman et al, with reasonable expectation of adequate results.

13. Claims 16, 17, 20, 21, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Busnaina.

Busnaina does not specifically teach the specifically claimed frequencies and relations between the frequencies and the size of the wafer or parts of the apparatus.

However, the claimed frequencies are inside of the range disclosed by Busnaina.

The frequency is a result effective variable.

It would have been obvious to an ordinary artisan at the time the invention was made to find an optimum frequency for the transducers of Busnaina by routine experimentation in order to enhance the cleaning.

**Conclusion**

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patents 6,431,184 and 6,539,952 are cited to show the state of the prior art with respect to apparatuses for cleaning and processing wafers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Markoff whose telephone number is 571-272-1304. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PRIMARY EXAMINER

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Art Unit 1746

